This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) Process for the production of gasoline with a high octane number from a hydrocarbon feedstock that for the most part has 5 to 7 carbon atoms, comprising a majority of normal paraffins, iso-paraffins, and naphthenic compounds, and a minority of aromatic compounds, in which at least a portion of the feedstock and/or the feedstock after separation of at least a portion of branched paraffins is introduced into an isomerization unit (1), and an effluent (C) that is enriched with multi-branched paraffins is recovered, and the effluent (C) is sent into a stabilization column (2) from where light gases (D) that comprise hydrocarbons that have less than 5 carbon atoms are taken out at the top, and a flow (E) that is sent into a distillation column that is called a deisohexanizer (E) is taken out at the bottom, from which at least two flows are extracted:

a) At the top: a flow (H) that contains for the most part a mixture of normal pentane, isopentane and di-branched C6 paraffins,

b) In lateral draw-off or at the bottom: a flow (G) that comprises a majority of normal hexane and mono-branched C6 paraffins, which is, at least in part, recycled to the isomerization unit (1) and/or sent to a zone for storing and mixing petrochemical naphtha,

c) Optionally, at the bottom of the column, a flow (F) that contains a majority of C7 branched paraffins, cyclohexane and naphthenes,

then the top flow (H) is directed toward a separation unit (4) by a selective membrane relative to the normal pentane/isopentane separation, with flushing of the permeate by a gas that comprises at least one hydrocarbon and that comprises in particular:

- Either at least one portion of the flow G and hydrogen,
- Or an incondensable gas that comprises hydrogen or methane or ethane,

- Or a gas that is rich in hydrogen that directly supplies the isomerization unit at the outlet;

a mixture of this hydrocarbon with the permeate is recovered, at the outlet of the membrane separation unit, that is recycled at least in part to the isomerization unit and/or that is sent to the zone for storing and mixing petrochemical naphtha,
and a retentate (J) that is low in normal pentane, containing in a majority the isopentane and di-branched C6 paraffins, that is directed toward a zone for storing and mixing gasoline, is extracted from the separation unit (4).

2. (Original) Process according to claim 1, in which the hydrocarbon feedstock is introduced at least in part at the stabilization column (2) and/or at the deisohexanizer (3).

3. (Currently Amended) Process according to claim 1 ~~any of claims 1 and 2~~, in which the membrane separation is of the vapor permeation or pervaporation type.

4. (Currently Amended) Process according to claim 1 ~~any of claims 1 to 3~~, in which the membrane separation is a hyperbaric membrane process of the hyperfiltration or reverse osmosis or nanofiltration type.

5. (Currently Amended) Process according to claim 1 ~~any of claims 1 to 4~~, in which the membrane separation unit uses an MFI- or ZSM-5-type zeolite-based membrane, native or having been exchanged with ions of the group that consists of: H+; Na+; K+; Cs+; Ca+; and Ba+.

6. (Currently Amended) Process according to claim 1 ~~any of claims 1 to 4~~, in which the membrane separation unit uses a membrane based on LTA-type zeolites.

7. (Currently Amended) Process according to claim 1 ~~any of claims 1 to 4~~, in which the membrane separation unit uses a polymer membrane or composite constituted by polymers and at least one inorganic material.

8. (Currently Amended) Process according to claim 1 ~~any of claims 1 to 7~~, in which the deisohexanizer is a partition column from which are drawn off at least three flows: (H) at the top, (G) in lateral draw-off, and (F) at the bottom.